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# SCHOOL-BASED MANAGEMENT (SBM) CONTROL SYSTEM FOR PAGSANJAN SENIOR HIGH SCHOOL

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***Abstract*:** There has been a growing interest in recent technological innovations intended to enhance school governance and management. As educational institutions seek higher levels of administrative efficiency and stakeholder interest, the demand for systems that aid in School-Based Management (SBM) processes increases. Unfortunately, available systems provide little or no configuration for this specific problem to ease the burden on the teachers. This is the gap that the researchers intend to address by designing and developing a school-based management control system for Pagsanjan Senior High School. The system encompasses an easy-to-use interface that allows administrators, group leaders, and members to access SBM activities, track performance, and simplify communication. The researchers used the experimental and developmental research design, which guided them in a systematic software design and development approach to structure the system construction processes. During the evaluation phase, the researchers implemented black box testing to assess the system's operational capabilities and subsequently opened testing with ten evaluators selected from the school community. In addition, the survey-based evaluation for User Acceptance Testing was constructed through ISO/IEC 25010 Software Quality Standards and incorporated criteria on satisfaction regarding system use and overall system evaluation. The use of five-point Likert scale surveys provided data from evaluative perspectives from a technical standpoint. The results showed that the system fully addresses user requirements and received the evaluation rating of "highly acceptable", indicating its possible contribution towards improvement in the management and governance of the school.

***Keywords***: School-Based Management; Control System; Software Development; Black Box Testing; User Acceptance Testing; ISO/IEC 25010; Secondary Education; User-Centered Design.

## I. INTRODUCTION

Pagsanjan Senior High School is a public high school located in Pagsanjan, Laguna, Philippines, which was started in 2016 by the Department of Education K-12 program for students enrolled in Grades 11 and 12. It offers a variety of Technical Vocational Tracks, which include Information and Technology (ICT), Computer Systems Servicing NC II, Industrial Arts- Automotive Servicing, and General Academic Strand (GAS). Pagsanjan Senior High School also ensures the students' career goals by catering to all the required subjects of the K-12 program. The school also claims to provide a high standard of education, which meets the country's educational standards while catering to the educational requirements of the local community.

School-based Management refers to an effort to improve the education system by transferring greater decision-making power from the Central Office to the school. Republic Act No. 9155, otherwise known as the Governance of Basic Education Act of 2001, provides the legal backing to the existing policy on School-Based Management. This legislation highlights the need for involvement of the community in the control and administration of schools and seeks to improve education through more decentralized decision-making.

DepEd Order No. 83, s. 2012 provides for the procedures to be followed in the implementation of the revised School-Based Management (SBM) framework in the Philippines, providing for the engagement of communities and a focus on the learner in the educational processes. This order also sets forth systematic evaluation procedures for the processes carried out in SBM, relates to the Philippine Accreditation System for Basic Education (PASBE), and restructures the existing task forces to facilitate input by stakeholders. The order aims to improve schools and their services to ensure that they are relevant to their communities by removing the suspension of SBM assessments (Department of Education, 2012).

Pagsanjan Senior High School has grappled with inefficiencies in managing voluminous documentation required for School-Based Management (SBM) means of verification. Irrespective of the committees involved in manual filing, collating, recording/institutional development, and organizing these documents, it has invariably remained inefficient. This data duplication has made the validation process even more complex.

In response to these problems, the researcher suggested constructing a School-Integrated Management Control System for Pagsanjan Senior High School. This School-Based Management Information System is intended to improve document management via a database. This streamlined the processes of uploading, downloading, retrieving, archiving, and printing necessary documents. Thus, the system intends to enhance productivity and ease the

management of SBM-related documents to assist the school towards efficient and participative school governance.

## RESEARCH OBJECTIVES

The research was generally designed, developed, and tested the functionality using Black Box Testing by the selected IT experts, and evaluated based on ISO/IEC 25010 software qualities, the school-Based Management (SBM) Control System for Pagsanjan Senior High School that enhanced data management and improved the decision-making process related to SBM practices. Specifically, the study sought to achieve:

1. To design and develop a web-based SBM Control System that efficiently manages, organizes, and retrieves SBM documents and data by DepEd standards and SBM principles:
    1.1. Task Management Module;
    1.2. Document Management Module and
    1.3. Evaluation and Monitoring Module.
2. To test the major functionalities of the developed system using Black Box Testing, focusing on input validation, output accuracy, and system behavior.
    2.1. School Principals' Accounts;
    3.2. School Team Leaders' Accounts;
    2.3. School Team Members' Accounts and
    2.4. SBM Evaluators Accounts.
3. To evaluate the developed data management system for School-Based Management (SBM) based on the ISO/IEC 25010 Software Quality Model, using the following quality characteristics, as assessed by the end users:
    3.1. Functional Suitability;
    3.2. Performance Efficiency;
    3.3. Compatibility;
    3.4. Interaction Capability;
    3.5. Reliability;
    3.6. Security;
    3.7. Maintainability;
    3.8. Flexibility and
    3.9. Safety.

## II. LITERATURE OF THE STUDY

This chapter presents the relevant literature and studies that the researcher considered in strengthening the claim and importance of the present study.

A research work, whose title is “Practices, Challenges, and Prospects of Implementing School-Based Management (SBM) System in Ethiopian Schools: Implications for Policy Makers,” was conducted by Berhanu in 2023. This study attempts to assess the problem of implementing school-based management systems in a given school context, describe available potential barriers, and provide recommendations aimed at facilitating the improvement of SBM in the schools. The researcher described many barriers, such as inadequate managerial trust, poor collaboration among the school governance team, and teacher skepticism about the worth of SBM. The data provided in this study are pertinent for this research, particularly during the formulation of the “School-Based Management Control System for Pagsanjan Senior High School.” Those studies stressed the importance of having active participation from the school leadership and local stakeholders in determining decisions that influence school performance.

Rint and Astillero (2024) analyzed the “Challenges in School-Based Management: A Basis for Enhancement Program” regarding the public elementary school teachers 'issues implementing school-based management (SBM) in Cabuyao, Philippines, for the 2022-2023 schooling year. The study focused on the problem of workload imbalance and excessive paperwork, suggesting that SBM was burdensome and counterproductive to effective teaching. In this case, the SBM made teaching duties too complicated to adequately execute, given the limited time available. The performance and time effectiveness of a simple teaching task in a constrained timeframe suffered considerably. Using qualitative interviews and quantitative surveys, the researchers found that while participation in SBM was not significantly related to educational qualifications or length of employment, SBM engagement did have a measurable relationship with concerted SBM engagement and resultant challenge intensity. The authors recommended an enhancement program aimed at improving time management with a secondary focus on task allocation. In response to the findings, this study presents the web-based SBM Control System, which aims to automate and streamline the organization for documentation, scheduling, and performance monitoring. Through automation of routine tasks and consolidating data access, this system alleviates the administrative burden faced by teachers, thereby promoting more efficient school operations. This study provides a technological framework that simplifies SBM implementation and automates its routine management, whereas Rint and Astillero’s process-based enhancement program focuses solely on the process.

Pascua (2024), in her study "Implementation of school-based management in private secondary schools of Abulug District: Basis for an enhancement plan", analyzed the demographic profiles regarding the SBM’s implementation. Using surveys from teachers and administrators, the study indicated that implementation was rated high, with curriculum and instructional practices showing gaps. Stakeholder engagement and capacity-building were cited as essential to SBM strengthening. The current study addresses the recommendation by providing an effortless web-based documented communication solution for task visibility and role transparency. It meets the gap Pascua outlined by providing real-time SBM data and reports to stakeholders to enhance participation and accountability through automated support systems.

## III. RESEARCH METHODOLOGY

This chapter presents the parts of the research methodology, including the research design, the study population, sampling design, data collection instruments, validation of the questionnaire, statistical treatment, and project design**.**

### Research Design

In this study, the researcher used an organized and rational research design in developing and implementing a web-based School-Based Management (SBM) Control System for Pagsanjan Senior High School. As with any given research, the salience of the design chosen depends on its

particular objectives. It assists in seamlessly guiding the study from problem definition to data collection, analysis, and relationship evaluation. Salter (2023) argues that a well-laid research design enables the researcher to streamline the arguments of their study, particularly when dense data from extensive fieldwork is collected. This aligns with the approach in this study; the researcher worked within the institution to understand the SBM practices to document the deep processes that transcend educational management.

Moreover, at Pagsanjan Senior High School, the impact and effectiveness of the web-based SBM Control System were evaluated utilizing the school's experimental research design. As noted by Em, S. (2024), it is critical to have an experimental research design to evaluate the systems and solutions' performance within the given boundaries. This principle justifies the purpose of the study, which is to find out whether the implementation of web-based SBM enhanced measurement, management, and school governance.

**Population of this Study**

The objective number three (3) of the study focuses on evaluating the developed School-Based Management (SBM) for Pagsanjan Senior High School based on the ISO/IEC 25010 Software Quality Model by the end users. The target users of the SBM Control System include different roles and personnel who are actively involved in the management and implementation of SBM processes at the mentioned school.

**Table 1.** Frequency Distribution of the Respondents.

| Respondents | Total Population | Accessible Population | Percentage |
|---|---|---|---|
| Principal | 8 | 8 | 16% |
| Head Teachers | 4 | 4 | 8% |
| Master Teachers | 7 | 7 | 14% |
| Admin Officers | 4 | 4 | 8% |
| Admin Assistant | 4 | 4 | 8% |
| Teachers | 23 | 23 | 46% |
| **Total** | **50** | **50** | **100%** |

The table presents the frequency distribution of respondents involved in this study, along with their corresponding target population, sample size, and their percentage contribution.

In this regard, the researcher identified a total of fifty (50) respondents from various Department of Education sectors in schools that had undergone accreditation. The total population was categorized as follows: (a) eight (8) school principals, (b) four (4) head teachers, (c) seven (7) master teachers, (d) four (4) administrative officers, (e) four (4) administrative assistants, and (f) twenty-three (23) teachers. These groups represent sixteen percent (16%), eight percent (8%), fourteen percent (14%), eight percent (8%), eight percent (8%), and forty-six percent (46%) of the total respondents, respectively.

The chosen respondents had answered the Technology Acceptance Model Questionnaire, comprising the nine (9) software quality characteristics categories of questions, as a method of evaluating the developed system by the researcher.

**Location of the Study**

The study was conducted at Pagsanjan Senior High School, located in Pagsanjan, Laguna, Philippines. The school serves as one of the primary settings for the implementation and evaluation of the school-based Management (SBM) Control System. It is one of the public senior high schools under the jurisdiction of the Department of Education (DepEd) in Laguna Province, committed to improving education services through efficient management systems.

**Table 2.** Administrative and teaching staff are directly involved in School-Based Management (SBM) processes at Pagsanjan Senior High School.

| USER GROUP | DESCRIPTION |
|---|---|
| Principal | The main authority responsible for school management and SBM evaluation activities. |
| Head Teachers | Assists the principal in administrative and system-related operations. |
| Master Teachers | Assists in the technical operation, maintenance, and day-to-day support of the system. |
| Administrative Officers | Lead specific SBM domains or indicators, coordinating tasks among team members, and ensuring compliance with standards. |
| Administrative Assistant | Provide subject-matter expertise and mentor teachers in implementing SBM-related practices and instructional improvements. |
| Teachers | Carry out instructional tasks and contribute to the documentation and implementation of SBM within their respective domains. |

The table describes the different clerical and pedagogical personnel who take part in the school-based management (SBM) processes at Pagsanjan Senior High School, including their roles, which together ensure proper implementation of SBM.

**System Tester's Profile**

To achieve Objective Number Two (2) of this study, the researcher invited ten (10) credible testers to conduct Black Box Testing on the School-Based Management (SBM) Control System for Pagsanjan Senior High School, focusing on evaluating its key functionalities such as input validation, output accuracy, and system behavior.

**Sampling Design**

In this case, the researcher undertook a simple random sampling technique in which the respondents were selected from the reachable population. As noted by Narayan, Sinha, and Singh (2023), any sampling strategy seeks to guarantee optimum representation of the intended population while economizing on available resources. Under certain circumstances, such as a small and readily accessible

population of interest, some researchers employ random sampling systems where all constituents of a given population are enrolled to respond to a survey, in this case, the Survey User Acceptance Testing Tool. Such an approach eliminates sampling bias, resulting in full population direct generalization of the study outcomes. Crossman (2020) describes total population sampling as a non-probability sampling technique where every individual within a delineated population and/or subgroup is included for complete representation. This approach is the most useful in small populations where the aim is to capture and reflect all pertinent viewpoints rather than a representative subset.

**Data Collection Instruments**

In this part, the researcher underscored the importance of gathering information in the substantiation of a research project. The researcher employed several tools during the data collection phase, which were instrumental to the development of this study. These are the methodologies used by the researcher: Interview done personally, Observation, Internet research, Survey, Library research, and Consultation.

**Software Development Model**

The researcher adopted a Software Development Life Cycle (SDLC) model in the system development. Manna (2024) in the article "Iteration, that True Core Modern Development Beyond Agile Methodology" states that iteration is the true core of modern software development and describes the shift from traditional linear to adaptive iterative systems driven by continuous optimization and learning. Specifically, the researcher applied an Agile Methodology tailored to the construction and development of the system, showcasing clear processes and steps. This approach accelerates the development of software to incorporate iterations and evaluations by users. The following are the phases in developing the project: *Phase 1:* Requirement Gathering- In this phase, the researcher focused on more out in detail critical elicitation with the participants, which in this case entails the faculty and administrative staff from Pagsanjan Senior High School. *Phase 2:* Design- In this phase, the researcher developed a design of the web-based School-Based Management (SBM) Control System. *Phase 3:* Development- In this phase, the researcher started with the actual work on the system as per the design deal. *Phase 4:* Testing- In this phase, the researcher undertook to check the system for defects and problems with its use. *Phase 5:* Deployment- During this phase, the system, which had been developed, when put to its final use, was fully functional. It was then deployed for use at the Pagsanjan Senior High School. *Phase 6:* Review- After deployment, the developed system went through continuous appraisal of its effectiveness and optimizations.

**System Architecture**

According to Raroque C. (2023), systems architecture is a crucial aspect of technology and engineering that involves the high-level planning and organization of complex systems. It acts as a strategic blueprint that guides the design, integration, and interaction of various system components such as hardware, software, data flow, and user interfaces. By defining how these parts work together, systems architecture ensures that the system functions efficiently, meets its intended objectives, and can adapt to future requirements.

**Fig. 1** System Architecture

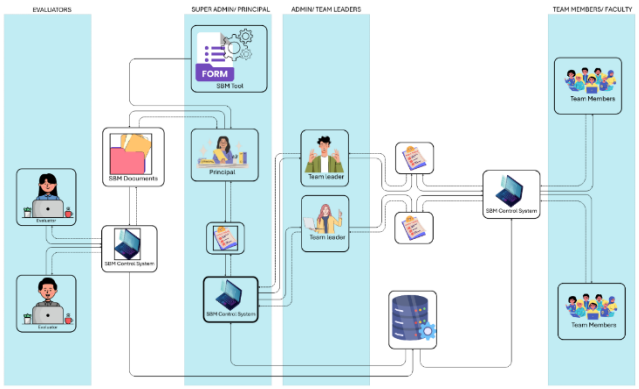



Figure 1 shows that the system has four user accounts: evaluators, principal, team leaders, and team members. These three users have different user interfaces but use the same database, where the researcher used MySQL for database management.

**System Testing**

Based on the definition provided by Phill Powell and Ian Smalley (2025), system testing refers to performance-based, end-to-end testing of an entire software system. This process includes various forms of testing such as functional, non-functional, interface, stress, and recovery testing. It adopts a black box testing approach, focusing on how the complete system performs rather than examining individual internal components.

In this step, the developed system is evaluated through operational tests conducted by its authors. In ensuring the system operates as intended both in efficiency and functionality, the researchers adhered to a well-defined methodology comprised of these critical elements: (a) formulation of a relevant evaluation tool named as a test instrument and (b) application of a testing procedure which included benchmark tests on the system's responsive actions to some predefined scenarios. This enables effective system refinement and validation against critical design requirements.

**Testing Tools**

This segment describes the system testing tools that have been included in all the discussions on the developed system. And according to the study of Bhavani (2023), the software testing tools validate whether a system meets the requirements and works as intended at a given point in time.

The Black Box Testing was the primary method used to evaluate the system's functionality and performance based on user interactions, without knowledge of its internal workings. This testing approach focuses on assessing the system's behavior and outputs based on different inputs, allowing for a comprehensive evaluation from the user's perspective. The objective number two (2) of this study is to test the major functionalities of the developed system using Black Box Testing, focusing on input validation, output accuracy, and system behavior.

**Evaluation Tool**

The User Acceptance Testing (UAT) verifies that the software performs according to pre-defined business requirements and expected milestones. Flatirons' 2024 report showed that 88% of respondents view UAT as a crucial phase for achieving any quality target. This phase of UAT testing includes alpha and beta testing, field testing, and end-user testing. All these forms focus on the optimization and improvements needed for a fully functional software solution.

The goal of this research, revising the data management system for School-Based Management (SBM), was approached from the perspective of the ISO/IEC 25010 Software Quality Model, examining the quality attributes highlighted by the users: Functional Suitability, Performance Efficiency, Compatibility, Usability, Reliability, Security, Maintainability, and Portability.

**Statistical Treatment**

To analyze the data, the researcher gathered data through the use` of Statistical Treatment. The researcher used Weighted Mean and the Standard Deviation.

- **Mean Score-** The mean score helped to assess the general opinion of the respondents regarding the system's effectiveness.
- **Standard Deviation-** The standard deviation was used to measure the variability or dispersion of the respondents' evaluations of the SBM Control System. A higher standard deviation indicated a greater variation in the responses, while a lower standard deviation suggested more consistent opinions.

## IV. RESULTS AND DISCUSSION

This chapter shows the results of the research from the objectives that the researchers had set from the beginning of the whole research study. This chapter also presents the analysis and the interpretation of the results of the data acquired from the testing and the evaluation of the developed mobile application.

**RESEARCH OBJECTIVES NO. 1.** To design and develop a web-based SBM Control System that efficiently manages, organizes, and retrieves SBM documents and data by DepEd standards and SBM principles: 1.1. Task Management Module, 1.2. Document Management Module, 1.3. Evaluation and Monitoring Module.

**1.1** Task Management- In the case study interview with the OIC Principal/PSDS, the interviewee expressed concerns regarding the absence of a systematic procedure for allocating and supervising tasks to the members of SBM teams. They emphasized the necessity of all team members understanding their roles and timelines for designated performance metrics set by the Department of Education. This constructive criticism gave rise to the design of the Task Management Module, which enables the assignment of roles, scheduling, and monitoring of the status of multiple SBM activities by administrators.

**1.2** Document Management Module- An additional interview conducted with the Principal of Francisco Benitez Memorial School (FBMS), Ms. Sotomayor, reflected on the importance of filing a single document or a collection of documents for SBM validation. Ms. Sotomayor recounted the struggles towards cross-departmental document access, which advanced her argument in favor of creating a centralized Document Management Module. She remarked on the lack of systematic gap tracking for school programs, which directly supported the addition of the Task Management Module in the proposed system. Moreover, Ms. Sotomayor focused on the importance of being able to generate performance reports for immediate access to non-meet goals and evaluate continuously over time for SBM accreditation.

**1.3** Evaluation and Monitoring Module- Lastly, Ms. Sotomayor provided feedback on the importance of generating reporting tools and tracking performance against targets over time which are prerequisites of SBM accreditation. This feedback further defined the scope of the Evaluation and Monitoring Module that assists heads and coordinators in monitoring compliance with DepEd Order No. 83, s. 2012.

**RESEARCH OBJECTIVES NO. 2:** To test the major functionalities of the developed system using Black Box Testing, focusing on input validation, output accuracy, and system behavior. 2. 1. School Principals' Accounts, 2.2. School Team Leaders' Accounts, 2.3 School Team Members' Accounts, 2.4. SBM Evaluators Accounts.

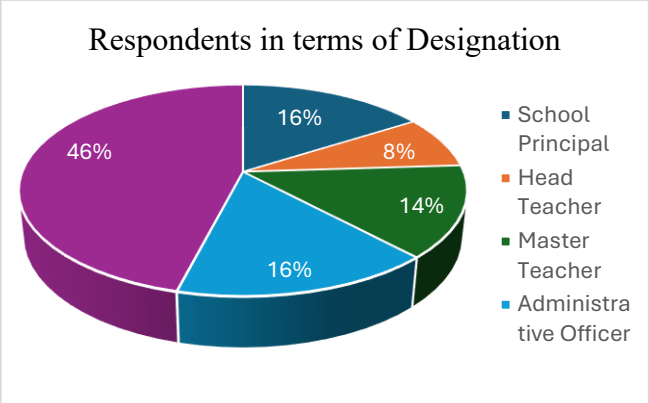
**Table 3.** Black Box Results – School Principals Account, Team Leaders Account, Team Members Account, and SBM Evaluators Account.

| Process | System Evaluators | Frequency | | Percentage | |
|---|---|---|---|---|---|
| | | Pass | Fail | Pass | Fail |
| School Principals Account | 10 | 10 | 0 | 100% | 0 |
| Team Leaders Account | 10 | 10 | 0 | 100% | 0 |
| Team Members Accounts | 10 | 10 | 0 | 100% | 0 |
| SBM Evaluators Accounts | 10 | 10 | 0 | 100% | 0 |

The table presents a summary of Black Box Testing results for the School Principals Account, Team Leaders Account, Team Members Account, and SBM Evaluators Account functionalities of the developed SBM Control System. A total of ten (10) system evaluators from various IT fields participated in testing critical dashboard components. The results show a 100% pass rate across all tested processes, and each of the evaluators successfully accessed.

**RESEARCH OBJECTIVES NO. 3.** To evaluate the developed data management system for School-Based Management (SBM) based on the ISO/IEC 25010 Software Quality Model, using the following quality characteristics, as

assessed by the end users: 3.1. Functional Suitability 3.2. Performance Efficiency 3.3. Compatibility 3.4. Interaction Capability 3.5. Reliability 3.6. Security 3.7. Maintainability 3.8. Flexibility 3.9. and Safety.




As a part of ensuring that the developed system achieved its goals, the researchers carried out User Acceptance Testing (UAT). This testing approach gave users (e.g., teachers and school staff) the opportunity to interact with the system and assess its efficacy in real-world scenarios. UAT assists in appraising the effectiveness, ease of use, and overall satisfaction of the system with the users before its full implementation.

In addition, the researchers conducted an evaluation divided into four (4) parts: a.) For Principals, b.) Faculty that were team leaders that experienced SBM accreditation, c.) Faculty that were team members that experienced SBM accreditation, and d.) SBM Evaluators that were responsible for evaluating the SBM.

**Demographic Profile of the respondents**

The figures below display the demographic profile of the households based on their age and level of digital literacy.

A. Respondents in terms of their level of Computer Literacy- the User Acceptance Technology Questionnaire, distributed to the respondents it includes a question to determine their computer literacy.

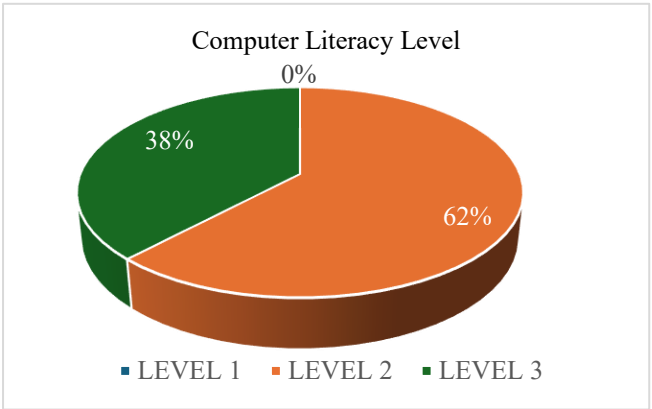



**Fig. 2.** The pie graph shown shows the demographic profile of 50 respondents in terms of their computer literacy level.

The figure illustrates the digital literacy levels of respondents when using desktop or laptop computers, based on a survey of 50 participants. The results reveal that none of the respondents identified as Level 1, indicating that all participants possess at least a basic proficiency in using computers. A total of 31 respondents (62%) rated themselves as Level 2, meaning they can use a computer independently and perform basic functions. Meanwhile, 19 respondents (38%) considered themselves at Level 3, demonstrating the ability to operate computer applications easily and efficiently. This data suggests that all respondents are digitally literate, with a significant portion exhibiting advanced proficiency.

B. Respondents in terms of their Designation- User Acceptance Technology Questionnaire distributed to the respondents, it has a blank where they will determine their school position or designation.

**Fig. 3.** The pie graph shown shows the demographic profile of 50 respondents in terms of their school position or designation.

The pie graph represents the demographic profile of 50 respondents based on their school position or designation, as gathered from the User Acceptance Technology Questionnaire. Among the respondents, Faculty members make up the largest group, with 23 respondents (46% of the total). School Principals and Administrative Officers each represent 8 respondents (16% each). Master Teachers account for 7 respondents (14%), while Head Teachers represent the smallest group with only 4 respondents (8%). This breakdown provides a clear view of the distribution of respondents' roles within the school, highlighting the diverse range of perspectives that contributed to the feedback. These varying roles also suggest that the feedback comes from a broad spectrum of school functions, ensuring a well-rounded evaluation of the system.

**User Acceptance Evaluation Survey Results and Interpretation**

The following presents the evaluation results for all of the respondents of this study, such as the School Principals, Head Teachers, Master Teachers, and other faculty.

The proponent of this study printed the User Acceptance Technology Questionnaire to gather all the written data and scores of each respondent in every after-system demonstration and testing. After the researcher gathered the data, the researcher tallied the data in the Excel file to easily compute the Mean and Standard Deviation of every ISO 25010 characteristic. Below is the table that shows the results of the mentioned characteristics in objective number 3:

**Table 4.** User Acceptance Testing Results ISO 25010 Software Characteristics.

| ISO 25010 | MEAN | SD |
|---|---|---|
| 1. Functional Suitability | 4.81 | 0.39 |
| 2. Performance Efficiency | 4.77 | 0.42 |
| 3. Compatibility | 4.77 | 0.42 |
| 4. Interaction Capability | 4.80 | 0.40 |
| 5. Reliability | 4.64 | 0.48 |
| 6. Security | 4.73 | 0.45 |
| 7. Maintainability | 4.67 | 0.47 |
| 8. Flexibility | 4.77 | 0.42 |
| 9. Safety | 4.69 | 0.46 |

The table shows the following results:

1. *Functional Suitability*- The mean score is 4.81(SD=0.39), suggesting the system supports all essential functions like uploading, retrieving

documents, and organizing SBM data with minimal errors.

2. *Performance efficiency*- Received a score of 4.77 (SD = 0.42), indicating the effectiveness of the system's operational performance across various conditions in handling large data volumes as well as multiple users without any significant delays.
3. *Compatibility*- Achieved a mean score of 4.77 (SD = 0.42), confirming SBM data uploaded with Pagsanjan Senior High School tools and browsing from other devices.
4. *Interaction Capability (Usability)*- Achieved a score of 4.80 (SD = 0.40), reflects the system's ability to provide an interface designed in a manner to be fairly intuitive and simple to use, providing tasks that can be accomplished easily.
5. *Reliability*- Scored 4.64 (SD = 0.48), indicating the overall standard SBM reliability a system is expected to have concerning performance, data-centric activities, and recovery from non-issue system changes during operations.
6. *Security*- System scored 4.73 (SD = 0.45) pertaining strongly SBM user and data security by certification, encryption, and role-based access control.
7. *Maintainability*- Scored 4.67 (SD = 0.47) regarding document information and process workflows, indicating the describable system was not complex, therefore maintenance and assistance were easy to provide.
8. *Flexibility*- Received 4.77 (SD = 0.42). This is suggestive of the system to easily adjust to new requirements and features from users and growth from the organization, while integrating with other software.
9. *Safety-scored* an average of 4.69 with a standard deviation of 0.46. The organization safeguards against data loss or corruption and employs rigorous backup and error recovery protocols.

Overall, the system achieved a mean score of 4.74, demonstrating high user satisfaction and excellent system quality and standard deviation of 0.43. The results confirm that the system meets the required standards, performing efficiently, securely, and flexibly, making it a reliable solution for managing SBM data at Pagsanjan Senior High School.

## V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter summarizes the results of the scoped objectives set at the onset of the study. An analysis and interpretation of the data obtained from the assessment of the SBM Controlled System for Pagsanjan Senior High School is synthesized in this chapter. The data arrive at certain conclusions together with the objectives and the research questions posed in the study. Further, the researchers outline the considerations that arise from the findings, together with some suggestions that stem from these findings in light of the purpose and conclusions of the study.

**Summary**

The Pagsanjan Senior High School, located in Pagsanjan, Laguna, was founded in 2016 as part of the K-12 system of the Department of Education. The school has different academic tracks offered, such as Accountancy, Business, Management, and Science and Technology, to ensure quality education meets national standards and the particular requirements of the local community.

Guided by the principles of School-Based Management (SBM), the school operates within the framework of Republic Act No. 9155, which allows greater flexibility in decision-making to the school-based constituents, such as the district, principal, teachers, parents, and students. This focus is on enhancing education through community engagement to improve student achievement.

There were multiple issues encountered by the School Principal, School Team Leaders, School Team Members, and even the SBM Evaluators in the process of conducting the SBM. The issues mentioned in this study were identified through different data gathering methods such as face-to-face interviews, consultation, online research, and direct observation by the researcher of its client.

The study aimed to create, design, test, and evaluate the Web-based School-Based Management Control System for Pagsanjan Senior High School as a solution that the researcher determined in the mentioned school. The researcher of this study developed a system that was driven by the results of the data gathering by the researcher. The researcher integrated different programming languages in developing the website, such as Python, Flask, HTML, Bootstrap, JavaScript, Etc. On the other hand, the researcher used the Black Box Testing Tool for the 10 invited IT Professionals to test the functionality and features of the system. And lastly, the researcher used the User Acceptance Testing aligned with the ISO/IEC 25010 Software Quality Models.

**Conclusion**

In conclusion, the study attained its objectives, which were: 1.) to design and develop a web-based SBM Control System. 2.) Tested the major functionalities of the developed system using Black Box Testing that was done with the ten (10) IT Professionals selected by the researcher, and lastly, evaluated the developed system for School-Based Management (SBM) based on the ISO/IEC 25010 Software Quality Model

Specifically, the researchers conclude the following:

1. The researcher successfully designed and developed a Web-Based School-Based Management (SBM) Control System that efficiently manages, organizes, and retrieves SBM documents and data in alignment with DepEd standards and SBM principles. In addition, the researcher chooses the right programming language and technology used in developing the system. And lastly, the system integrates the following core modules to support its functionality:
    a. Task Management Module – Enables principals, team leaders, and team members to assign, track, and update SBM-related tasks seamlessly. This ensures accountability, encourages collaboration, and promotes timely completion of responsibilities across different roles.
    b. Document Management Module – Provides team members and team leaders

with a secure, centralized repository for uploading, organizing, and retrieving SBM documents in compliance with DepEd standards. It helps principals monitor documentation progress and ensures that all necessary files are accessible and well-managed.

c. Evaluation and Monitoring Module – Equips evaluators and principals with real-time assessment tools and reporting features to monitor the implementation of SBM practices. This supports informed decision-making, enhances transparency, and fosters continuous improvement across all governance levels.

2. The system's user interface was simple, particularly beneficial for users who functioned at a level two computer literacy skill. It allowed principals, team leaders, team members, and evaluators to easily manage tasks, upload and retrieve documents, as well as track the SBM implementation. And with no support required, the need for supervision greatly improved the likelihood of system utilization in a cross-functional manner.
3. The collection and analysis of qualitative feedback through the Agile Model, User Acceptance tests following ISO/IEC 25010 criteria, as well as five-point Likert scale and survey techniques, allowed participants to share thoughts and appreciation on the iterative system designed for them. This led to the achievement of dependable and precise outcomes and assurances.
4. Following the evaluation of recorded data during the testing phase, the outcomes yielded a mean of 4.74 overall, thus, the results were granted the label "Highly Acceptable".

**Recommendations**

To improve the usability, accessibility, and functionalities of the SBM Control System, scholars propose recommendations based on the study's findings and results. SBM Control System's offline access is recommended so that users from schools in rural areas with limited internet access can navigate and use the system. Furthermore, it is recommended to update the system with the latest SBM framework, shifting from four dimensions to six, to comply with DepEd standards. To improve document management, users need the ability to edit the SBM documents within the system rather than after uploading them. Adding more navigational tabs and expanding font size will bolster user access and ease the SBM's navigation. Security enhancements to the directed sensitive data access and addressing trim security gaps are critical. Conducting training sessions to increase user confidence and competency in guiding system operations is also recommended. These SBM form tailored monitoring tools and summarization capabilities also enhance documentation precision. User satisfaction was noted for ease of use, archiving documents, easy access, and task distribution, so those features should be maintained and improved upon continuously. Finally, as some users suggested implementing the system in other schools in the Pagsanjan district, those suggested areas of adaptability and scalability should be looked into further.

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